Amendments to the Claims

Please cancel Claims 1 and 15. Please amend Claims 2, 3, 8-10, 12,13,16,17,22-24, 26, 28. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Cancelled)

2. (Currently Amended) A method of Claim 3 [[1]], wherein the symbol is the last symbol in a preamble.

3. (Currently Amended) A method of timing synchronization to a symbol boundary of a packet comprising:

performing an auto-correlation on samples of an incoming packet to identify the symbol and a first approximation of a trailing boundary of the symbol; and

performing a cross-correlation between samples of the incoming packet and standard symbol values to more precisely identify the symbol trailing boundary near the first approximation, ~~of Claim 2,~~ wherein performing a cross-correlation further includes processing the result of the cross-correlation to discard a number of the most recent cross-correlation values and identify the symbol trailing boundary from the remaining cross-correlation values.

4. (Original) A method of Claim 3, wherein identifying the symbol timing boundary includes locating a number of maximum peaks in the remaining cross-correlation values and determining the symbol trailing boundary depending on the distance between the maximum peaks.

5. (Original) A method of Claim 4, wherein identifying the symbol timing boundary further includes repeatedly selecting a maximum peak occurring earliest in time as the symbol timing boundary unless any of the remaining maximum peaks occurs a certain distance of cross-correlation values or more away, until a maximum peak has been identified as a symbol timing boundary.

6. (Original) A method of Claim 5 wherein the number of maximum peaks is 3.

7. (Original) A method of Claim 5 wherein the certain distance of cross-correlation values is 10.

8. (Currently Amended) A method of Claim 3 [[1]] wherein the packet and standard symbol values conform to the IEEE 802.11a standard.

9. (Currently Amended) A method of Claim 3 [[1]] wherein the packet and standard symbol values conform to the IEEE 802.11g standard.

10. (Currently Amended) A method of timing synchronization to a symbol boundary of a packet comprising:

performing an auto-correlation on samples of an incoming packet to identify the symbol and a first approximation of a trailing boundary of the symbol; and

performing a cross-correlation between samples of the incoming packet and standard symbol values to more precisely identify the symbol trailing boundary near the first approximation, ~~of Claim 1 further comprising~~:

detecting a rise in short power, where a rise is determined when the incoming power of a packet is above a set threshold for a set number of consecutive clock cycles; and

in response to detection of a rise in short power performing the auto-correlation.

11. (Original) A method of Claim 10 wherein the set threshold is four consecutive clock cycles.

12. (Currently Amended) A method of Claim 3 [[1]] wherein the timing synchronization occurs at a network access point.

13. (Currently Amended) A method of Claim 3 [[1]] where in the timing synchronization occurs at a individual mobile stations.

14. (Original) A method of timing synchronization to a symbol boundary of a packet conforming to an IEEE 802.11 standard occurring at a network access point comprising:

detecting a rise in short power, wherein the incoming power of a signal is above a set threshold for a set number of consecutive clock cycles;

in response to detection of a rise in short power, performing an auto-correlation on samples of an incoming packet to identify the preamble and a first approximation of a trailing boundary of the preamble; and

performing a cross-correlation between samples of an incoming packet and a standard preamble and processing the results by discarding a number of the most recent cross-correlation values, locating a number of maximum peaks in the remaining cross-correlation values, then repeatedly selecting a maximum peak occurring earliest in time as the symbol timing boundary unless any of the remaining maximum peaks occurs a certain distance of cross-

correlation values or more away, until a maximum peak has been identified as a symbol timing boundary near the first approximation.

15. (Cancelled).

16. (Currently Amended) An apparatus of claim 17 [[15]] further comprising:

a delay line, the delay line having a plurality of pipelined registers for receiving samples of an incoming packet, and having outputs to provide sample values to the auto-correlator and cross-correlator.

17. (Currently Amended) An apparatus for timing synchronization to a symbol boundary of a packet comprising:

an auto-correlator that performs an auto-correlation on samples of an incoming packet;

a cross-correlator that performs a cross-correlation between samples of the incoming packet and standard symbol values~~of Claim 16~~ wherein the cross-correlator includes a peak processing module for discarding a number of the most recent cross-correlation values and identifying the symbol timing boundary from the remaining cross-correlation values; and

a processor with inputs from both the auto- correlator and the cross-correlator, wherein the processor first identifies a first approximation of a trailing boundary of the symbol using the input from the auto-correlator, and subsequently more precisely identifies the symbol timing boundary near the first approximation using the input from the cross-correlator,.

18. (Original) An apparatus of Claim 17 wherein the peak processing module identifies the symbol timing boundary by locating a number of maximum peaks in the remaining cross-

correlation values and determining the symbol trailing boundary depending on the distance between the maximum peaks.

19. (Original) An apparatus of Claim 18 wherein the peak processing module further identifies the symbol timing boundary by repeatedly selecting a maximum peak occurring earliest in time as the symbol timing boundary unless any of the remaining maximum peaks occurs a certain distance of cross-correlation values or more away, until a maximum peak has been identified as a symbol timing boundary.

20. (Original) An apparatus of Claim 19 wherein the number of maximum peaks is 3.

21. (Original) An apparatus of Claim 19 wherein the distance of cross-correlation values is 10.

22. (Currently Amended) An apparatus of Claim 17 [[15]] wherein the packet and standard preamble conform to the IEEE 802.11a standard.

23. (Currently Amended) An apparatus of Claim 17 [[15]] wherein the packet and standard preamble conform to the IEEE 802.11g standard.

24. (Currently Amended) An apparatus of Claim 17 [[15]] further comprising:

a short power circuit connected to the registers of the delay line that detects a rise in short power, where a rise is determined when the incoming power of a packet is above a set threshold

for a set number of consecutive data samples; and

wherein the processor further comprises an input from the short power circuit, and initiates the performance of the auto-correlation circuit when prompted by the short power circuit.

25. (Original) An apparatus of Claim 24 wherein the set threshold is four consecutive data samples.

26. (Currently Amended) An apparatus of Claim 17 [[15]] wherein the apparatus is located in a network access point.

27. (Original) An apparatus located in network access point for timing synchronization to a symbol boundary of a packet conforming to an IEEE 802.11 standard comprising:

a delay line, the delay line having a plurality of pipelined registers for receiving samples of an incoming packet;

an auto-correlator connected to registers of the delay line that performs an auto-correlation on samples of an incoming packet;

a cross-correlator connected to registers of the delay line that performs a cross-correlation between samples of the incoming packet and standard preamble values, and includes a peak processing module for discarding a number of the most recent cross-correlation values, locating a number of maximum peaks in the remaining cross-correlation values and determining the symbol trailing boundary depending on the distance between the maximum peaks, and then repeatedly selecting a maximum peak occurring earliest in time as the symbol timing boundary unless any of the remaining maximum peaks occurs a certain distance of cross-correlation values or more away, until a maximum peak has been identified as a symbol timing boundary;

a short power circuit connected to the registers of the delay line that detects a rise in short power, where a rise is determined when the incoming power of a packet is above a set threshold

for a set number of consecutive data samples; and

a processor with inputs from the auto-correlation circuit, the cross-correlation circuit, and the short power circuit, wherein the processor initiates the performance of the auto-correlation circuit when prompted by the short power circuit, then identifies a first approximation of a trailing boundary of the preamble using the input from the auto-correlation circuit, and subsequently more precisely identifies the symbol timing boundary near the first approximation using the input from the cross-correlation circuit.

28. (Currently Amended) An apparatus for timing synchronization to a symbol boundary of a packet comprising:

means for performing an auto-correlation on samples of an incoming packet to identify the preamble and a first approximation of a trailing boundary of the preamble; and

means for performing a cross-correlation between samples of the incoming packet and standard preamble values to more precisely identify the symbol timing boundary near the first approximation; wherein performing a cross-correlation further includes processing the result of the cross-correlation to discard a number of the most recent cross-correlation values and identify the symbol trailing boundary from the remaining cross-correlation values.